Program Area 2: Water Conservation and Water Quality

I. Introduction and Background

Water is consumed by all sectors of society, from agriculture, to industry, to commercial and residential communities. It is used to sustain human life, grow plants, wash our bodies, cars, and buildings, sustain our landscapes, and keep machinery running. Though 70% of the earth is made up of water, only 1% of this water is fresh and available for consumption. The consumption of water continues to grow at a surprising rate—during the 20th century, global demand for water increased six-fold, double the rate of population growth.

Water is obviously a precious resource in the arid west. Not only do we consume water, but in the use of water we also create water pollution that must be treated before it can be reintroduced into the natural water system. As was evident over the recent past, Coloradoans are becoming more aware of the need to protect and conserve our water resources for the sustainability of our ecological systems, agricultural industry, tourism, and quality of life in Colorado.

Activities by state agencies use significant amounts of water throughout the state. Drinking water and washroom water is consumed by tens of thousands of employees, clients, visitors, and patients every day. Outdoor use of water for landscaping at thousands of state buildings, parks, athletic fields, and golf courses also contributes to significant water usage.

II. Environmental and Economic Benefits

Reducing our water consumption and minimizing our impacts to water quality, provides both economic and environmental benefits for Colorado and state agencies. Governor Owens a few years ago asked state agencies to review water usage and find ways to reduce consumption rates. Conservation of water through the use of more efficient equipment, changes in behavior, and improved maintenance has the potential to save significant environmental and fiscal resources. The US Environmental Protection Agency estimates that through the installation of water efficient equipment and integration of water efficient practices into everyday operation, a 30% reduction in water consumption is possible. Payback periods for implementing water demand reduction measures at institutional, industrial, and commercial facilities are generally low, between 1-4 years, with an average payback period of less than 2.5 years. There are also secondary cost benefits to conserving water, such as reductions in energy use to heat water and reductions in costs to treat and dispose of water.

A water conservation and quality improvement program can:

- Reduce energy usage for treatment of wastewater;

- Reduce the need for chemical treatment for a cooling towers;
- Possibly reduce capital costs to the extent that new infrastructure to meet future needs is deferred, eliminated, or reduced;
- Protect the health of water bodies, wildlife, and habitats in Colorado;
- Result in changing design plans for development or redevelopment projects;
- Minimize stormwater runoff from development projects carrying elevated pollutant concentrations and loadings that can infiltrate groundwater or spill into surface waters.

III. Existing Water Conservation and Water Quality Efforts

- The State Laboratory has installed motion sensors for all of its restroom hand sinks.
- The State Laboratory has begun to convert their landscaping from Kentucky Bluegrass to native plants and ground cover such as Blue Grama grass and woodchips.
- CDPHE has install flow restrictors on all toilets to reduce the amount of water used during each flush.

IV. Water Conservation and Water Quality Statewide Strategies

- The Water Conservation and Quality Subcommittee should provide information resources to agencies to help the identify, assess, and implement water conservation and water quality opportunities – such resources/tools include:
  - -Websites such as www.ourwater.org and www.greenco.org
  - -Guides and fact sheets
  - -Water conservation resources
  - -Water audit checklists and guidelines (Denver Water will audit customers for free.
- The Water Conservation and Quality Subcommittee should work with the Department of Personnel and Administration to identify and offer water-efficient equipment and appliances on relevant state contracts, and should provide employee outreach to educate employees on all available water saving alternatives.

V. Water Conservation and Water Quality Agency Strategies

To help reach water conservation and water quality goals, agencies should:

- Use existing data (water/sewer bills) to prepare a summary of the volume and cost of water being consumed and to look for trends, patterns, and unexplained increases that could indicate leaks or inefficient use of water.

- Conduct water audits in large facilities or facilities with high outdoor water use – audits may be conducted by Denver Water or by hiring a consultant to identify measures where the greatest efficiencies and potential savings can be realized.

- Estimate cost and water savings for potential conservation measures, to prioritize projects' cost effectiveness.

- Replace plumbing fixtures that do not meet the following criteria:

    - Toilets: 1.6 gallon per flush
    - Urinals: 1.0 gallons per flush or try installing waterless urinals
    - Lavatory faucets: Low flow faucet aerators 1.0 gallons per minute
    - Shower heads: Low flow 2.5 gallons per minute

- Gradually phase out high water use landscapes at state run facilities. Change over to xeriscape plants such as Blue Grama Grass and Fine Fescues. For a great resource visit the Colorado State Cooperative Extension at: http://www.ext.colostate.edu/menuwater.html

- Minimize the amount of fertilizers applied to landscaping. Excess fertilizer will run off into state waterbodies.

- Be a creek steward. Have your agency adopt a stretch of creek and commit to cleaning up debris from it at least 2 times per year.

- Stencil around storm drains so people are aware that the water that enters this drain goes directly to waterways without being treated.

Action steps for water quality and water conservation improvements

A variety of short-term actions state facilities can take to reduce their environmental impacts.

- Implement a water conservation awareness and outreach program
  - Solicit employee ideas through surveys or suggestion boxes.
  - Place stickers in restrooms encouraging water conservation
  - Have employees use water conservation and water quality training modules available at www.co.train.org
  - Highlight water conservation measures for employees and general public

- Reduce non-essential water uses, especially during periods of drought. Non-essential water uses include, but are not limited to: vehicle washing (unless necessary for operator safety), decorative fountains that do not re-circulate water, routine watering of athletic fields and other identified by specific agency.

- Routinely inspect and repair any leaking water lines as well as pumps, valves and faucets.

- Focus on restroom water use, which is often up to 50% of water demand at institutions:

  - Replace old toilets that use 3.5 to 5.0 gallons per flush with 1.6 gpf units.
  - Install water saving aerators on faucets and other plumbing fixtures.
  - Check system pressure and install pressure-reducing valves to reduce water consumption.

- Limit lawn watering to hours when evaporation is lowest – early in the morning or later in the evening to maximize absorption and minimize evaporation.

- Plant drought tolerant native plants and grasses in existing landscapes to reduce irrigation needs.

- Eliminate once-through cooling systems.

- Don't wash lawn clippings or leaves down storm drains. Yard waste can clog storm sewers as well as add excess organic matter to local water resources.

- Consider hand pulling of weeds, especially before seeds are produced. This will keep chemical pesticides out of stormwater.